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Box Patent Application
Assistant Commissioner for Patents
Washington, DC 20231

Enclosed for filing is a patent application under 37 CFR 1.53(b) of: Dana Lynn Blair entitled METHOD AND APPARATUS FOR NETWORK TELEPHONY

This application is a [ ] continuation, [ ] divisional, [ ] continuation-in-part of prior application Serial No. _____.

Enclosures:

[X] Specification (pages 1-5); claims (pages 6-8); abstract (page 9)
[X] 2 sheets of informal drawings
[X] Declaration or Combined Declaration and Power of Attorney
  [X] Newly executed
  [ ] Copy from a prior application (37 CFR 1.63(d))
  [ ] Incorporation by Reference--The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
  [ ] Deletion of Inventors (signed statement attached deleting inventor(s) named in the prior application (37 CFR 1.63(d)(2) and 1.33(b)
[ ] Power of Attorney
[X] Assignment with cover sheet
[ ] Certified copy of priority document:

[ ] Information Disclosure Statement with Form PTO 1449
[ ] Copies of references listed on attached Form PTO-1449
[ ] Preliminary Amendment

CLAIMS AS FILED				
For	Number Filed	Number Extra	Rate	Basic Fee $ 710.00
Total Claims	20-20		x $18.00 =	
Independent Claims	6-3	3	x $80.00 =	240.00
Multiple Dependent Claim Fee			x $270.00 =	
TOTAL FILING FEE				$ 950.00

[X] A check in the amount of $990.00 to cover [X] filing fee ($950.00) and [X] assignment recordal fee ($40.00) is enclosed.

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METHOD AND APPARATUS FOR NETWORK TELEPHONY

BACKGROUND

1. Field

This disclosure relates to voice over data network calling, more particularly to voice over data network calling that does not require an out of band communication to connect.

2. Background

The ability to make phone calls across data networks has become more prevalent. The technique is typically referred to as Voice over IP (Internet Protocol), Voice over FR (Frame Relay), or Voice over ATM (Asynchronous Transfer Mode), as examples. Generally, these technologies will be referred to as Voice over X (VoX).

Typically, when two users want to communicate using VoX, they make arrangements in another medium to connect the VoX call. They have to contact each other 'out of band,' meaning that they need some other way to communicate prior to making the VoX call. They may send each other an e-mail, fax or phone call using PSTN (public switched telephone network) to arrange the VoX call.

Once the call is arranged, the phone call can be initiated in a number of ways. In a first example, the users are both already connected to the network before the call is connected. In another, one user is connected to the network and initiates the call through the network. The network then has to convert the VoX call data back to voice and initiate a PSTN dialout from the network to the destination phone. Alternatively, the destination phone has to have a pre-assigned network address, allowing the caller to identify the phone by its address. Another alternative is to have the phone permanently connected to the network, so it can always be contacted across the network.

None of these solutions are optimal for wide spread use of network calling. The arrangements to connect by VoX make the VoX call redundant and eliminate the cost savings available by using bandwidth for which payment has already been made. PBX servers must be available for the network to perform dialing out of the network to make contact with the PSTN. Preassigned network addresses are not usually scaleable, limiting the number of devices that can be on network hubs, as well as being wasteful of unused or little used addresses. Finally, permanently connecting phones to the network is more expensive and again does not capitalize on the advantages of network calling.

SUMMARY

One embodiment is a method for converting a public switched telephone network call to a data network call. A PSTN call is received and identified prior to the call being completed. The call is rejected and a call is placed to a network service provider by the destination phone. Once connected to the network the destination phone connects to a server or site that allows the destination phone to identify the network address of the origination phone. Once it is identified, the call is completed by sending packets directly between the two phones.

Another embodiment originates a PSTN call to a destination phone. When the call is rejected, the origination phone places a call to a service provider that allows the origination phone to connect to the network. Once connected, the origination phone connects to a server or site that allows the origination phone to identify the network address of the destination phone. Once the address is known, the call is completed by sending packets directly between the two phones.

Another embodiment is a network phone that includes a connector that allows the phone to connect to a PSTN and a data network. The network phone includes a detector to detect a call identifier, as well as a transmitter to send a call identifier on an originating call. A processor in the phone is configured to either originate a call or receive a call.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention may be best understood by reading the disclosure with reference to the drawings, wherein:

Figure 1 shows one embodiment of a public switched telephone network call being converted to a data network call.

Figure 2 shows a flow chart of one embodiment of a method of converting an outgoing public switched telephone network call to a network call.

Figure 3 shows a flow chart of one embodiment of a method of converting an incoming public switched telephone network call to a network call.

Figure 4 shows one embodiment of a network phone.

DETAILED DESCRIPTION OF THE EMBODIMENTS

Figure 1 shows two phones making a public switched telephone network (PSTN) call that is converted to a data network call. PSTNs provide telephone services in most homes.

PSTN typically refers to an analog call being made over standard copper wires, but in this instance it will be used to refer to any telephone calls made using public telephone networks.

A user desires to make a network call. The user picks up the origination phone 10 and places an origination call to the destination phone 12. The term phone as used here may include a computer with a modem, microphone, speaker and a network dial up connection to a network service provider, which will be referred to as a personal computer. It may also include a standard telephone customized to include the necessary software to perform the methods of the invention, which will be referred to as a customized telephone. The origination call will go through the PSTN to the destination phone. As part of the call, a call identifier will be sent along with the call signal. An example of a call identifier is caller ID, available in many residential areas.

The destination phone 12 receives the call identifier prior to the call being completed and rejects the call. The destination phone recognizes the call identifier as coming from a phone that can connect over a data network, such as IP, FR or ATM. The rejected call signal is returned to the origination phone 10. While the rejected call signal is being sent to the origination phone 10, the destination phone 12 places a call to a network service provider. When the origination phone 10 receives the rejected call signal, it also places a call to a network service provider.

The two phones do not need to use the same network service provider. They need to be able to connect to a server or site known to the phones where they can connect a data network call. The phone will inform the service provider of the location when it makes connection to the service provider. Once both of the phones are connected to the same server or site, they discover the network address of each other. When each phone knows the addresses, data packets are sent directly to each phone across the network.

In this manner, a PSTN call can be converted to a data network call. It affords the users the ability to make any type of call, local, long-distance or toll-free, using only a local phone call. The assignment of addresses is done dynamically, allowing better scalability and more efficient use of network addresses. Further, there is no requirement for the network to place a call by dialing out of the network.

One embodiment of a method for converting a PSTN call to a data network call at the receiving end is shown in Figure 2. At 20, a PSTN call is received. The call is not completed, so as to avoid any long-distance charges, the call identifier is received and the call identified at 22 as being one that can be completed over a data network. The destination

phone then rejects the call at 24. After rejecting the call, the destination phone then places a call to a service provider at 26.

When the call to the service provider is completed, the destination phone then connects to a server or site that allows it to discover the identity of the origination phone at 28. This can be done by sending the PSTN phone number of either the destination or origination phone and having the origination phone respond. The message could be a "here I am" message with the phone number of the destination phone, or a "I am looking for" message with the phone number of the origination phone. Other means of the phones discovering each other's network addresses are also possible. In the two examples above, the PSTN phone number acts as an identifier of which both phones have prior knowledge.

Once the two phones have identified themselves, they can direct packets to each other directly using the network addresses. This completes the network call at 30. At this point, a PSTN call has been converted to a data network call at the destination phone.

A method for converting a PSTN call to a data network call at the originating end is shown in Figure 3. At 32, the origination phone places a PSTN call to the destination phone. When the destination phone rejects the call, the origination phone detects the rejected signal at 34. The origination phone then places a call to a service provider at 36. The origination phone then discovers the network address for the destination phone at 38, in a manner as discussed above. The call is then completed at 40.

The origination phone and destination phone could be one of several different configurations. As mentioned above, the phone may be a computer with a microphone, speaker, modem and a dial up to a network provider. Alternatively, the computer may be resident on a local area network. While this does not capitalize on the ability to have phones not permanently connected to the network, one of the phones may have the ability to contact the service provider without placing a PSTN call. The call in this instance would be through a connection over a network.

In some instances the capabilities of the invention may be provided to the phones as software. The software would more than likely be distributed to users as some sort of computer readable medium. The medium would contain software instructions that, when executed, would allow the user to implement the methods of the invention.

The phone, whether it is a computer or a customized phone capable of having the software installed in it, will be referred to as a network phone. Figure 4 shows a block diagram of one embodiment of a network phone in accordance with the invention. The phone

50 will have a connector 52 that allow connection via PSTN. In the example of a computer, this connect will more than likely be a phone jack. In the example of a computer that also has a persistent network connection, the connector may be an Ethernet card. It may also have both types of connectors.

In communication with the connector 52 is a detector 56 that can detect and decode a call identifier for when the network phone receives a call to be converted. In order to act as an origination phone, the phone will also have a transmitter 54 that transmits a call identifier. Both of these components may be part of the processor 58. The processor 58 will have a memory and be configured to perform the necessary steps of converting either an incoming or outgoing call to a data network call.

Thus, although there has been described to this point a particular embodiment for a method and apparatus for converting a PSTN call to a network call, it is not intended that such specific references be considered as limitations upon the scope of this invention except in-so-far as set forth in the following claims.

WHAT IS CLAIMED IS:

1. A method for converting a public switched telephone network call to a data network call, the method comprising:
   a) receiving the public switched telephone network call from an origination phone at a destination phone;
   b) identifying a caller identifier for the public switched telephone network call;
   c) rejecting the public switched transmission call;
   d) placing a call to a network service provider;
   e) determining a network address for the origination phone; and
   f) completing a network call with the origination phone.
2. The method of claim 1 wherein the destination phone is a personalized computer.
3. The method of claim 1 wherein the destination phone is a customized telephone.
4. The method of claim 1 wherein the call to the network service provider is made via PSTN.
5. The method of claim 1 wherein the call to the network service provider is made via a local area network.
6. A method for converting a public switched telephone network call to a data network call, the method comprising:
   a) placing a public switched telephone network call from an origination phone to a destination phone;
   b) detecting a rejected call from the destination phone;
   c) placing a call to a network service provider;
   d) determining a network address for the destination phone; and
   e) completing a network call with the destination phone.
7. The method of claim 6 wherein the origination phone is a personal computer.
8. The method of claim 6 wherein the origination phone is a customized telephone.
9. The method of claim 6 wherein the call to the network service provider is made via PSTN.
10. The method of claim 6 wherein the call to the network service provider is made via a local area network.
11. A network phone, comprising:
    a) a phone connector operable to connect to a public switched telephone network;

b) a transmitter operable to transmit signals corresponding to a phone number for a call destination and a call identifier;

c) a detector operable to receive an incoming call from another station and detect supplementary signals associated with that call;

d) a processor operable to

i) place a public switched telephone network call to a service provider in response to the supplementary signals;

ii) detect a network address for the other station; and

iii) complete a network call between the network phone and the other station.

12. The network phone of claim 11, wherein the network phone is a personal computer.

13. The network phone of claim 11, wherein the network phone is a customized telephone.

14. A computer-readable medium containing software code that, when executed, results in:

a) receiving a public switched telephone network call from an origination phone at a destination phone;

b) identifying a caller identifier for the public switched telephone network call;

c) rejecting the public switched transmission call;

d) placing a call to a network service provider;

e) determining a network address for the origination phone; and

f) completing a network call with the origination phone.

15. The computer-readable medium of claim 14 wherein the software code is executed by a personal compute equipped to place public switched telephone network calls.

16. The computer-readable medium of claim 14 wherein the software code is executed by a customized telephone.

17. A computer-readable medium containing software code that, when executed, results in:

a) placing a public switched telephone network call from an origination phone to a destination phone;

b) detecting a rejected call from the destination phone;

c) placing a call to a network service provider;

d) determining a network address for the destination phone; and

e) completing a network call with the destination phone.

18. The computer-readable medium of claim 17 wherein the software code is executed by a personal compute equipped to place public switched telephone network calls.

19. The computer-readable medium of claim 17 wherein the software code is executed by a customized telephone.

20. A network phone, comprising:

a) a means for connecting to a public switched telephone network;

b) a means for transmitting signals corresponding to a phone number for a call destination and a call identifier;

c) a means for receiving an incoming call from another station and detect supplementary signals associated with that call;

d) a means for placing a public switched telephone network call to a service provider in response to the supplementary signals;

e) a means for detecting a network address for the other station; and

f) a means for completing a network call between the network phone and the other station.

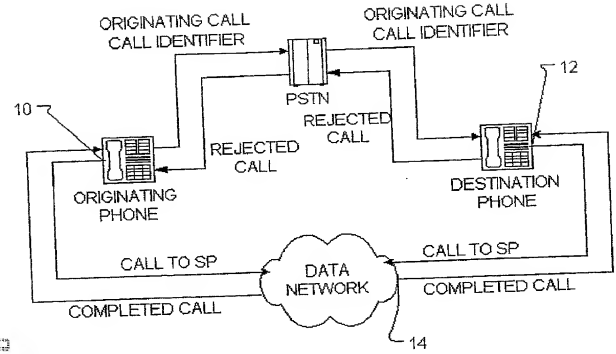
MJM Docket No. 2705-127

METHOD AND APPARATUS FOR NETWORK TELEPHONY

ABSTRACT

A method for converting a public switched telephone network call to a data network call. In one approach, the method includes receiving the public switched telephone network call from an origination phone at a destination phone and then identifying a caller identifier for the public switched telephone network call. The call is then rejected and a call placed to a network service provider. Once connected to the network, the network address for the origination phone is determined and the call is completed across the data network. Alternatively, a PSTN call is placed from an origination phone to a destination phone. The origination phone detects a rejected call from the destination phone and places a call to a network service provider. Once connected to the network, the network address for the destination phone is determined and the call is completed across the data network. A network phone capable of acting as either a destination phone or an origination phone is also discussed.

Figure 1



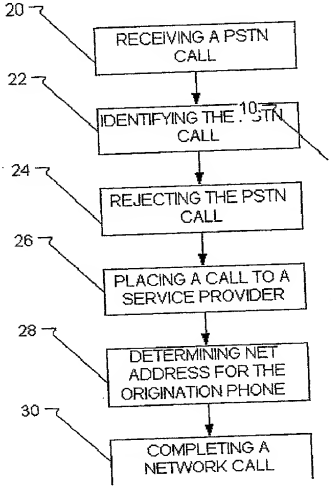


Figure 2

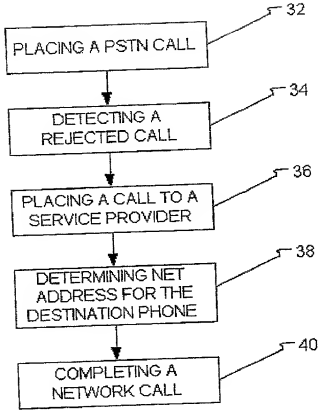


Figure 3

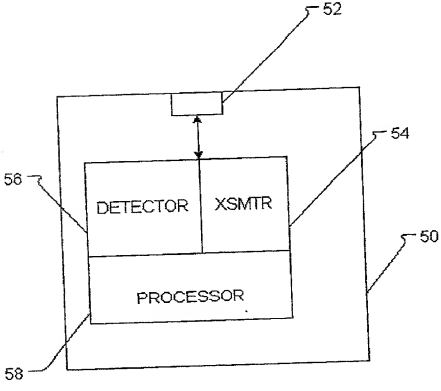


Figure 4

PATENT APPLICATION
Attorney Docket No. 2705-127

COMBINED DECLARATION AND POWER OF ATTORNEY
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As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled METHOD AND APPARATUS FOR NETWORK TELEPHONY, the specification of which:

[X] is attached hereto.
[ ] was filed on _____(if applicable)
[ ] and was amended on _____(if applicable)
[ ] with amendments through _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, Sec. 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Sec. 119 (a)-(d) or §365(b) of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)			Claiming Priority?
_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	[ ] Yes [ ] No

I hereby claim the benefit under Title 35, United States Code, Sec. 119(e) of any United States provisional application listed below:

Provisional Application No. Filing Date

I hereby claim the benefit under Title 35, United States Code, Sec. 120 or §365(c) of any PCT international application designating the United States of America listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Sec. 112, I acknowledge the duty to disclose information which is

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(Application No.)	(Filing Date)	(Status) (patented, pending, abandoned)

I hereby appoint the following attorneys to prosecute the application, to file a corresponding international application, to prosecute and transact all business in the Patent and Trademark Office connected therewith:

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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